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ABSTRACT

This review of research looks at the complex issues of school effectiveness by dividing the field into three clusters: (1) characteristics of effective teachers, (2) characteristics of effective learners, and (3) institutional and organizational characteristics of effective instruction. Research findings are summarized on college students' evaluations of their best teachers, noting their favored personality traits, behaviors in the classroom, and academic ability. Objective studies of the characteristics of award-winning teachers are also summarized. College student characteristics are discussed based on studies covering personality measures, past performances as predictors of success, and learning styles. Finally, the studies of instructional and organizational characteristics cover lectures as a teaching technique, the varieties of personalized systematic instruction, and the cognitive styles of instruction (such as discovery learning, problem solving, and contracting). (JW)

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THE TEACHING/LEARNING PROCESS:

STATE OF THE SCIENCE

CIRCA 1983

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Abstract

The current trend of "back to basics" and the Reagan administration's emphasis on "merit pay for master teachers" has renewed concern about the activities of the classroom. While there has been considerable rhetoric about effective teaching, teachers, and educational outcomes, there seems to be little effort to deal with the complexity of the instructional process and the variables that influence the process. This paper will attempt to deal briefly with the complexity of this issue by reviewing samples of current research on: (1) teacher characteristics, (2) student characteristics, and (3) instructional and organizational characteristics of the classroom. Teacher characteristics will be viewed primarily from the point of students' perceptions of effective instruction and instructors, especially college students who have had thousands of opportunities to view teacher behavior. Student characteristics will be discussed in terms of (1) personal characteristics, (2) past performance, and (3) learning styles of effective learners. The instructional and organizational variables section will consider three instructional modes: (1) the lecture, (2) teacher manager, and (3) cognitive style. Suggestions for integration of existing data and future research will be presented.

THE TEACHING/LEARNING PROCESS:

STATE OF THE SCIENCE CIRCA 1983

Several years ago, when schools and colleges began to experience their first significant decreases in enrollment, there appeared to be an increased concern about the effectiveness of instruction and instructors. The amount of purposeful, well-designed, published research on instructional effectiveness, especially at the collegiate level increased. As enrollments continued to drop and schools maintained the "last-in, first-out" policy, the amount of such research in print seemed to lessen. Also, as many college instructors received tenure, there was a lesser need for them to present evidence of their teaching effectiveness, or to document it.

The current trend of "back to basics" and the Reagan administration's emphasis on "merit pay for master teachers" has renewed concern about the activities of the classroom. However, the considerable rhetoric about effective teaching, teachers, and assumed educational outcomes has tended to oversimplify the complexity of the teaching/learning process. Effective teachers seem to be viewed as "its" devoid of contextual variables. Also ignored is any discussion of expected outcomes of the educational process. It is assumed that schools are to prepare students for elite institutions of higher learning.

Over the last half century years, there have been numerous empirical studies of the teaching/learning process. This paper will look at the complex issue of effectiveness in the teaching/learning process in terms of three variable clusters: (1) characteristics of effective teachers; (2) characteristics of effective learners; and (3) institutional and organizational characteristics of effective instruction. Primary emphasis will be

on the data obtained from studies employing college students as subjects, since these studies are the most numerous.

Methodological Issues

Baumgart (1977) suggested that educational researchers need to map and to quantify: (1) the characteristics that learners bring to the learning situation; (2) environmental variables that influence learning; and (3) teacher behaviors that affect students' classroom performance. Borich (1977) critically reviewed past attempts to identify the behavioral correlates of effective teaching, proposed a systematic measurement framework for studying classroom behavior, and identified sources of invalidity that must be remedied if data from classroom research are to be usable.

Brophy (1974, 1978) has developed a technique for studying the teacher in the elementary classroom. Gage (1978) notes the particular value of Brophy's work. Gage indicates that, although many might argue to the contrary, educational researchers have much data that, if carefully analyzed, can yield us accurate pictures of what goes on in the classrooms of teachers, both effective and ineffective. Guba (1978) and Gage (1978) have called for a new look at our research methods. Guba argues for a less mechanistic, more naturalistic view of the classroom. Gage suggests that educational researchers quit worrying about randomization of students in classrooms and concentrate instead on the classroom as a unit of measure. He notes that randomization of students in a classroom would create an unnatural class environment. Frase (1977) suggests that a more effective organization of classroom research into micro and macro variables in the analysis of content of instruction and the management of learning activities would contribute ultimately to more integrated theories of instruction and learning.

Following Frase's suggestion, the study of the teaching/learning process might best focus on three variable clusters: (1) teacher characteristics; (2) student characteristics; and (3) characteristics of the teaching/learning processes.

TEACHER CHARACTERISTICS

Traditional student end-of-course evaluations of the instructor and instruction have yielded considerable information about the characteristics of teachers and the types of instruction that students prefer; however, the vast majority of these studies have been limited to the characteristics viewed as positive in college professors. Less is known about the characteristics that elementary and secondary students prefer in their teachers.

Reliability, Validity and Generalizability

While student evaluation studies have traditionally been criticized as unreliable and invalid measures of students' affective and cognitive learning, recent studies have found that well-designed evaluation instruments can gain the desired information reliably and with considerable accuracy and that such data are often quite generalizable.

Abbot and Perkins (1982) found high internal reliability and construct validity for items on the questionnaires they had constructed. Beck (1981) noted that employing clear, precise language in item construction greatly enhances evaluation questionnaire reliability and validity. Cohen (1981, 1982), employing meta-analysis techniques to analyze data from 21 undergraduate psychology classes, found the instruments employed to be valid in their assessment of teaching techniques employed in each class. Marsh (1982) achieved similar results when he employed path analysis to predict students' end-of-course performances and their evaluation of instructor effectiveness.

Characteristics Identified

Through a variety of techniques, researchers have identified various instructor and instructional characteristics that students perceive as facilitating learning. Several clusters of characteristics have been identified, e.g.:

a. personality;

b. instructor behavior

c. academic ability of instructors.

Anderson et al. (1977) identified five characteristics of effective college instructors: (1) empathy; (2) competence; (3) conventionality; (4) stage presence; and (5) excitement. These characteristics were not shared by faculty who were viewed as ineffective by the 930 subjects in the study. Neal et al. (1978) clearly associated the effective college instructor with the helping relationship; i.e., one who interacts frequently with students at the interpersonal level.

Roberts (1978) found that certain academic disciplines are dominated by particular personality types (Myers-Briggs Type Indicator), although most faculty tend to be introverts with a tendency toward control. Faculties tend to draw students of similar personality type, thus contributing to the self-fulfilling prophecy. Similarly, Sofman, Hajosy and Vojtisek (1976) using the Embedded Figure Test found that science faculty tend to exhibit significantly greater field independence than faculty in other disciplines.

Recently there has been increased interest in studying individual differences between faculty members and between faculties, across disciplines.

Otis (1977) employed the Student-Faculty Role Questionnaire to determine: (1) the roles that the faculty of the various departments in a large

medical school viewed themselves as fulfilling, and (2) the students perceptions of the roles of the faculty members in the various departments. Each of the five departments had very different perceptions of their role in the school. Self-perceptions were incongruent with perceptions of other faculties. Students provided still a different view.

Passi and Malhorta (1975) reported Indian college students preferred more democratic professors over authoritarian professor. Faculty authoritarianism was found to be unrelated to sex and training but was positively related to age of the faculty member.

Tennyson, Boutwell and Frey (1978) reported that students preferred college professors who were oriented toward teaching rather than research, campus social organizations or administration. Education lower classmen chose researchers as second. Business majors indicated no clear second choice. Upperclassmen were oriented exclusively toward professors as teachers.

McAven and Gordon (1981) and Ebert (1966) found effective teachers to have many of the characteristics commonly held by school counselors. Marsh and Ware (1982) reported that when pressured to achieve, students view "teacher enthusiasm" as the most important variable in instructional effectiveness.

Masendorf and Kratzsch (1977) found that successful teachers in Germany (i.e., those whose students achieved): (1) evoked favorable reactions from their students; (2) tended toward self-underestimation; (3) were critical in self-judgment; (4) manifested low discrepancy between self-image and reliability; and (5) were severe in judging pupil achievement.

Studies that have looked at the relationship between personal characteristics of teachers and the performance of their students have concluded that

effective teachers tend to be sympathetic toward students, competent, enthusiastic, somewhat introverted, clear in their role perceptions, and more democratic than autocratic. Faculty who receive particularly high student ratings tend to be more extroverted, high in enthusiasm and openly friendly.

Instructor Behavior and Context

Studies of instructor behavior are somewhat constrained by the fact that certain instructional methods and, thus, instructor behaviors, are more commonly used with particlar groups of students and in particular types of courses and subject matter. Recently some of these constraints have begun to disappear as instructors have become aware of the advantages of employing a variety of techniques in a particular course.

Rich and Bush (1978) found that direct teaching style facilitated growth in elementary students with low social-emotional development (SED) while indirect teaching was most effective with students with higher social-emotional development. Differences were most apparent in the area of emotional behavior, then achievement, and attention to learning tasks.

VanHorn (1976) found that students of teachers who employed positive reinforcement and/or information processing models of teaching scored higher on the Specific Self-Concept of Academic Ability Test (SSC).

After careful review of the questionraire responses of 311 teachers who had been rated as outstanding (73% nominated as Teacher of the Year, 16% recommended by colleagues and/or administrators), Tschudin (1978) identified 17 characteristics of these outstanding teachers. None were shared with the 109 controls who also completed the questionnaire. All 17 were statistically significant:

1. sets goals that develop the students' confidence;
2. gathers ideas from a wide variety of sources;

3. creates better plans than average teachers, but willing to deviate from them;
4. better classroom designers;
5. uses common materials in uncommon ways - original;
6. works harder at individualization;
7. disciplines students with less punishment;
8. uses a wider variety of teaching techniques;
9. provides students an appealing array of activities;
10. gets students actively involved in learning;
11. uses all the help that they can get;
12. assigns less homework;
13. uses teacher-made tests sparingly;
14. uses checklists, student folders, and other less traditional evaluation techniques;
15. more involved in activities outside the classroom;
16. are more humorous and more enthusiastic;
17. succeed through hard work.

Several recent studies have focussed on the interpersonal skills of instructors and the effect of those skills on students' affective and cognitive achievement and the students' evaluation of the instructor's instructional effectiveness. Abrami, Leventhal and Perry (1982), using meta-analysis, found that "instructor expressiveness" had impact on students' ratings of instruction but not on the amount of content acquired. Abrami, Perry and Leventhal (1982) report that teachers' classroom behavior had much more effect on students' ratings of the instructor than upon actual achievement. The measured personality characteristics of the students did not appear to be related to the rating they assigned to their instructors.

Prather and Smith (1976) analyzed over 40,000 grades given by 1,000 college teachers and found: (1) academic field and grades were related; i.e., in courses that emphasize factual learning, grades are significantly lower than courses that focus on career-orientation; (2) grades are positively related to the level of the course; (3) part-time teachers tend to award higher grades; (4) sex, marital status, and minority status of teachers are not related to grade given; and (5) class size and grades are negatively correlated for undergraduates.

Presently, there is increased interest in studies of the effect of various types of instruction and instructor behavior on student achievement and students' evaluation of that instruction. From the existing research, it can be concluded that students expect teachers to employ a variety of techniques and use material from a variety of sources, to individualize, to be specific in what they expect, and to evaluate fairly.

Becchio and Costin (1977) found that GRE scores of graduate teaching assistants could be used to predict the TA's teaching effectiveness as measured by their students' performances on the course final and the students' end-of-course evaluations. Students' achievement in an introductory psychology course was related to the TA's scores on the GRE Advanced Psychology Test and number of hours of psychology taken as an undergraduate. Student evaluation of the course and the instructor (TA) was related to the TA's GRE Verbal Score.

Although there are many diverse pieces of data about faculty characteristics, there have been very few systematic attempts to study this phenomenon in depth. Most profiles are composites drawn from various sources. Fortunately, several new statistical techniques, such as meta-analysis, are available to aid in the integration on this diverse data.

STUDENT CHARACTERISTICS

Although there are many more studies of student characteristics as they relate to effective teaching and learning than there are studies of teachers, there are few systematic, integrated studies (Gage, 1978). The majority of such studies have used college students as subjects.

Personality Measures

Andrews (1978), Annis and Davis (1979), and Hohn, DesLauriers and Deaton (1977) investigated the relationship between field dependence/independence of students and performance in the college classroom. Andrews (1978) found the discovery method to be superior to the expository method for independent learners, but not for dependent learners. Annis and Davis (1979) found field dependence to be unrelated to acquisition and/or retention of knowledge acquired using "most" or "least" preferred study technique. Hohn et al. (1977) observed that low external focus of control, low endurance, and high autonomy predicted comprehension on self-paced instruction.

Eanet, Meeks and Earle (1979) reported that students with stronger self-concepts tended to show greater gains in remedial reading skills than students with lower self-concepts.

Ayers and Rohr (1977) found no significant relationship to obtain between students' democratic/authoritarian scores and their major fields of study; however, when grouped together, students in non-abstract, practical areas (e.g. engineering or business) tended to score higher in authoritarianism.

Past Performances

Cross and Semb (1977) and Morris and Kimbrell (1976) found that PSI was most beneficial for students who had lower GPA. PSI had little differential effect on students with moderate to high GPAs.

Darr (1979) found that students who achieved well in an undergraduate educational psychology course were those who had received an A or B in the introductory general psychology course, performed well on the educational psychology pretest, and expected to receive an A or B in the educational psychology course.

Learning Style

Dunn and Dunn (1979), Fuhrman (1978), McKnight (1978), and Magnam and Smith (1978), after numerous investigations, have concluded independently that there are numerous learning styles just as there are numerous teaching styles and that student learning will be optimized when the student's learning style is matched with the teaching style that is appropriate for his/her learning style in that particular situation.

Towle and Merrill (1975) and Darr (1979) investigated the relationship between students' use of objectives and their academic achievement and study behavior. Towle and Merrill (1975) found that graduate students use objectives: (1) to focus their studying; (2) to help determine what is relevant; and (3) to generate questions for self-evaluation of learning. Darr (1979) found the grade received in introductory educational psychology to be positively related to students' use of objectives in the course.

Further study is needed in order to determine the relationship between personality variables, learning style, and effective use of instructional materials by students.

INSTRUCTIONAL AND ORGANIZATIONAL CHARACTERISTICS

Studies of alternative forms of instruction have enabled researchers to look more closely at micro-factors which influence learning, particularly in PSI, CBE, and other types of instructor-managed instruction. "Some of the more common models of instruction are the lecture/discussion, PSI, CBE, and discovery/problem solving."

Lecture

Although the lecture/discussion model has a long, proud tradition and is still undoubtedly the most frequently used model, it has received little direct study. Most often it is studied indirectly in a "brand X" study; i.e., it is compared to some more popular model of instruction, usually with the deck stacked against it. However, Gadzella (1975) found that the lectures coupled with mastery quizzes enabled students to perform better on the objective final than did individualized instruction. Individual instruction, however, facilitated better performance on an essay final examination than did lectures. Abbot and Falstrom (1977) also noted that the major factor accounting for the apparent advantage PSI over other instructional models is increased frequency of mastery tests.

Personalized, Systematic Instruction (PSI)

PSI, CAI, CMI, and programmed instruction are instructional techniques in which material to be learned is broken into small segments then organized into hierarchically-presented wholes. Knowledge is fed to the learner in an ordered systematic fashion. Because it is ordered and controllable, the materials taught and their effects can be studied more carefully than in other models, thus a great deal of micro-data has been generated about these manageable techniques and the effects of manipulation of various components on student learning.

PSI has been used in a variety of content areas: statistics (Abbot & Falstrom, 1977), nutrition (Boren & Foree, 1977; Cross & Semb, 1976), introductory psychology (Goldwater & Aker, 1975), and introductory data processing (Harrison, 1977).

As indicated early, testing is a central aspect of any managed mastery program; consequently, it has been studied extensively. Abbot and Falstrom

(1977) suggested that the frequency of mastery tests accounted for most of the gain obtained under PSI. Bono and McAvoy (1977) found that students preferred self-graded self-tests to proctor-graded self-tests, but student performance on mastery tests was unrelated to who did the grading. Goldwater and Acker (1975) determined that keeping students working on weekly quizzes until they mastered the material raised the final exam grade significantly. Mastery students also reported enjoying the course more. Marholin (1976) found that a penalty for poor performance on early quizzes: (1) reduced the number of retakes significantly; (2) improved performance on the mastery quizzes; and (3) increased the overall performance in the course; i.e., significantly more As. Park and Marx (1976), conversely, found that stressing the final exam; i.e., counting it as 30% of the grade, disrupted students' performances on the final. Students in the 30% group did significantly less well. Clearly the research cited indicates the importance of frequent mastery testing in PSI.

PSI has frequently been compared with other forms of instruction as well as with deviations of itself; e.g. PSI without mastery tests vs. with, etc. Boren and Foree (1977) found no significant gain in student knowledge when PSI was compared to traditional lecture/discussion in a food and nutrition course; however, PSI students gained significantly greater psychomotor skills than students in lecture sections. PSI students also rated the instructor and instruction more positively than students in the lecture/discussion sections did.

Harrison (1977) obtained small, significant gains in knowledge and skills in data processing using PSI as opposed to traditional lectures. Students reported greater satisfaction under PSI. Grades were higher in the PSI sections also. Hursh (1976) also found PSI to be superior to traditional

instruction. Johnson et al. (1975) found students enrolled in PSI expressed greater satisfaction with the instruction and the instructor than those students enrolled in traditional classes. Students did not feel that PSI was any more difficult than the traditional course. Mao-Chen and Lanson (1977) found that study skills and organization learned in PSI courses generalized to other courses the student was taking; i.e., students' GPAs went up during PSI and stayed there after they completed the PSI course.

PSI is sometimes offered as a panacea for all students. Evidence to date does indicate that it has had many successes, a few draws, but not many real washouts. Certainly, some students seem to respond well to PSI. Cross and Semb (1976) and Morris and Kimbrell (1976) found that students with poorer academic backgrounds tended to demonstrate greater improvement under PSI. Eads (1976) found PSI to be especially effective with students from minority groups.

Another vital aspect of PSI is pacing. Who paces? How fast? Fernald (1975) reported the PSI students who self-paced did significantly better on pre-quizzes but not significantly better on mastery exams. Self-paced subjects liked contact with tutors more than teacher-paced subjects did. Reiser and Sullivan (1977) found that more self-paced than teacher-paced students tended to withdraw. There was no significant difference between self-paced and teacher-paced student on achievement or attitude variables.

One of the problems with PSI is that the withdrawal rate is often significantly higher than that found in more traditional courses. That, in part, may be a function of the early testing and feedback which is built into PSI courses. Students know sooner that they are not doing well, so they bail out. Kulik et al. (1977) found, somewhat surprisingly, that when they required students to achieve mastery on all quizzes, there was no significant

increase in the number of students who withdrew. Reiser and Sullivan (1977) found that more self-paced students got behind in their work and had to withdraw to avoid failing.

Lloyd and Eastman (1977) found that study questions facilitate student performance on probing questions. Kulik et al. (1977) reported that required remedial work until mastery was achieved raised overall performance level of the class and reduced grade range on the final exam, but did not influence proportion of students who completed the course or the students' rating of the course. Marholin (1977) used point-contingencies to improve students' participation in small groups.

Even this cursory review of PSI indicates the many variations of managed instruction that can be studied. There are many variables that can be controlled or manipulated either independently or in conjunction with other variables.

Cognitive Style and Instruction

Another general mode of instruction is gaining attention as alternative to the traditional lecture/discussion mode and, in some cases, to PSI. Cognitive style is really more of a macro concept than a micro. There are several methods that can properly be considered under the term cognitive style of instruction; e.g. discovery learning, problem solving, contracting, independent study, and other types of information processing procedures. These methods all require that the learner go beyond the evidence given, that he/she gather data, make predictions, generate hypotheses and test them until he/she reaches a viable solution. Because there is such a variety of techniques that can be involved and the steps in each are not necessarily sequential, research into the effects of the various cognitive styles of instruction is difficult and the results are often vague and ambiguous. However,

the techniques themselves are receiving attention from a variety of disciplines. The discovery or problem-solving method appears to be the more popular technique. Andrews (1978) found the discovery method to be superior to the expository method for acquisition of key concepts in chemistry. Fraas (1979) found simulation games to be an effective discovery techniques with business majors in an introductory economics course. McKnight and Lovelace (1979) found small group problem-solving to be superior to large group lectures for teaching mathematical concepts in introductory calculus. Taveggia (1977) suggests that independent study is the best way to go about discovery learning, or almost any type of learning. Greco (1978) suggests that instructors will have to work with students to move them from absorbers of knowledge to problem solvers-discoverers. Menges (1978) feels that the teacher must learn how to deal with students' questions and to use them to instructional advantage. Watts (1979) has his students take a stand on a controversial issue and gain the knowledge necessary to defend that position by doing the research themselves. The student engages in both discovery learning and problem-solving.

Contracting is another form of cognitive instruction. In contracting, the instructor and student jointly develop a learning agreement which specifies what the student is to learn, how, under what conditions, and how he/she will know when the goal has been achieved. Chickering (1977) and Gilbert (1976) note that contracting enables the instructor and student to deal with the students' unique individual differences, but contracting will be effective only if it is geared to the individual's personal learning need and style. The essentials of any contract are spelled out by Chickering and Gilbert. Contracting requires new responsibilities for the instructor; e.g. familiarity with a variety of instructional techniques and learning styles,

ability to diagnose student learning styles and prescribe appropriate instructional techniques. Contracting has been used quite extensively in elementary and secondary schools.

Discovery learning, problem-solving, simulation gaming and contracting seem to be a part of a larger movement--concern for the student. The roots and extensiveness of this concern is difficult to determine. Erikson (1977) reported that in the Big Ten universities there is more opportunity than ever before for faculty to try different types of instructional procedures, but he hastened to note that most professors do not know where to begin instructional innovation in their classrooms. They need the help of experts. Goldschmid and Goldschmid (1976) note that students need instructional programs geared to their special needs, not the traditional canned lectures or PSI. Hartnett and Centra (1977) found great differences between departments in the type and amount of material learned. To reduce such discrepancies, individualized programs will have to be developed.

If cognitive-oriented instructional techniques are to become influential in educational practice, a great deal more must be known about their effects on student learning. Research must also be conducted to identify and analyzed the essential characteristics and components of cognitive instruction. At present, little is known about these components.

SUMMARY

As Gage (1978) suggested, two things are needed in educational research today if we are to have a science of teaching. First, analyses, integration, and synthesis of the knowledge gleaned from educational research to date. Second, experimental studies that test the validity of data obtained from previous correlational studies. The challenge is clearly there. There are no easy answers. No panaceas.

Bibliography

_____. "What makes an A+ teacher? Ruth Tschudin has counted 17 things. Phi Delta Kappan, 1978 (December), 60(4), 267.

Abbot, R. D. & Falstrom, P. Frequent testing and personalized systems of instruction. Contemporary Educational Psychology, 1977 (July), 2(3), 251-257.

Abbot, R. D. & Perkins, D. Reliability and validity evidence for scales measuring dimensions of student ratings of instruction. Education and Psychological Measurements, 1982 (Summer), 42(2), 563-569.

Abrami, P. C., Leventhal, L., & Perry, R. P. Educational seduction. Review of Educational Research, 1982 (February), 52(3), 446-464.

Abrami, P. C., Perry, R. P., & Leventhal, L. The relationship between student personality characteristics, teacher ratings, and student achievement. Journal of Educational Psychology, 1982 (February), 74(1), 111-125.

Anderson, W. T., Alpert, M. I., & Golden, L. L. A comparative analysis of student-teacher interpersonal similarity/dissimilarity and teaching effectiveness. Journal of Educational Research, 1977 (September-October), 71(1), 36-44.

Andrews, J. D. Discovery teaching and student learning styles, 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978.

Annis, L. & Davis, J. K. Study techniques and cognitive style: Their effect on recall and recognition. Journal of Educational Research, 1978 (January-February), 71(3), 175-178.

Ayers, J. B. & Rohr, M. E. Another examination of authoritarianism and college major. Psychological Reports, 1977 (December), 41(3, Pt. 1), 828.

Baumgart, N. L. Designing research on teaching style. Educational Studies, 1977 (June), 3(2), 116-127.

Beck, K. Die semantische struktur mehrdimensionaler ratings als method en problem inder unterrichtsforscheing. (Germany) Zeitschrift fur Empirische Padagogik, 1981, 5(2), 65-82.

Bennett, S. K. Student perception of and expectations for male and female instructors: Evidence relating to the question of gender bias in teaching evaluation. Journal of Educational Psychology, 1982 (April), 74(2), 170-179.

Bevilacqua, J. P. The changing relationship between the university and the student: Implications for the classroom and student personnel work. Journal of College Student Personnel, 1976 (November), 17(6), 489-494.

Bono, S. F. & McAvoy, R. M. Student preference and performance under a self-grading and a proctor-grading procedure in a personalized system of instruction. Journal of Personalized Instruction, 1977 (March), 2(1), 28-54.

Boren, A. R. & Foree, S. B. Personalized instruction applied to food and nutrition in higher education. Journal of Personalized Instruction, 1977 (March), 2(1), 39-42.

Borich, G. D. Sources of invalidity in measuring classroom behavior. Instructional Science, 1977 (July), 6(3), 283-318.

Brophy, J. Recent research on effective teaching. 8th Annual Conference, Midwest Association of Teachers of Educational Psychology (MATEP), Bloomington, IN: Indiana University, November 3-4, 1978.

Brophy, J. E. & Evertson, C. Process product correlations in the Texas teacher effectiveness study, Final Report No. 74-4. Austin, TX: Research and Development Center for Teacher Education, University of Texas, 1974.

Chickering, A. W. Evaluation in the context of contract learning. Journal of Personalized Instruction, 1977 (June), 2(2), 96-100.

Clark, J. Using small groups to evaluate instruction. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978

Cohen, P. A. Student ratings of instruction and student achievement: A meta-analysis of multi-section validity studies. Review of Educational Research, 1981 (February), 51(3), 281-309.

Cohen, P. A. Validity of student ratings in psychology courses: A research synthesis. Teaching of Psychology, 1982 (April), 9(2), 78-82.

Cross, M. Z. & Semb, G. An analysis of the effects of personalized instruction on students of different initial performance levels in an introductory college nutrition course. Journal of Personalized Instruction, 1976 (March), 1(1), 47-50.

Darr, R. F., Jr. Evaluation of large group instruction. 2nd Annual Conference, Eastern Educational Research Association, Kiawah Island, SC, February 20-24, 1979.

Dunn, R. & Dunn, K. Learning styles: Practical applications of the research. Practical Applications of Research, 1979 (March), 1(3), 2-3.

Eads, J. W. Student performance in a modularized human anatomy and physiology course. Journal of Personalized Instruction, 1976 (March), 1(1), 32-35.

Eanet, M. G., Meeks, J. W., & Earle, W. Academic self-concept: Its relationships to reading gain scores and quality point averages of college freshmen. 2nd Annual Meeting of the Eastern Educational Research Association, Kiawah Island, SC: February 22, 1979.

Ericksen, S. C. Restless teachers and institutional support for change. Educational Psychologist, 1977, 12(2), 207-214.

Fernald, P. S. et al. Systematic manipulation of student pacing the performance requirement and contact with a teaching assistant in introductory psychology course. Teaching of Psychology, 1975 (December), 2(4), 147-151.

Fraas, J. W. The effectiveness of a simulation gaming method of instruction for teaching college level introductory economics. 2nd Annual Meeting of the Eastern Educational Research Association, Kiawah Inland, SC: February 22, 1979.

Frase, L. T. Instructional research: The enlargement of understanding. Educational Psychologist, 1977, 12(2), 128-137.

Fuhrmann, B. S. Assessing student learning styles. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 5-8, 1978.

Gadzella, B. M. Performance on objectives and essay tests by individualized study, lecture, and group discussion in educational psychology. Perceptual & Motor Skills, 1977 (June), 44(3, pt. 1), 753-754.

Gage, N. L. The yield of research on teaching. Phi Delta Kappan, 1978 (November), 60(3), 229-235.

Gilbert, J. Contract learning. Alternative Higher Education, 1976 (February), 1(1), 25-32.

Goldschmid, B. & Goldschmid, M. L. Enabling students to learn and participate effectively in higher education. Journal of Personalized Instruction, 1976 (September), 1(2), 70-75.

Goldwater, B. C. & Acker, L. E. Instructor-paced, mass testing for mastery performance in an introductory psychology course. Teaching of Psychology, 1975 (December), 2(4), 152-155.

Greco, C. M. Education for problem-solving: A consultation approach. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978.

Guba, E. Speaking about evaluation. 8th Annual Conference of the Midwest Association of Teachers of Educational Psychology (MATEP), Bloomington, IN: Indiana University, November 3-4, 1978.

Harrison, W. L. Teaching introductory data processing through competency-based testing. Journal of Educational Research, 1977 (October), 71(1), 45-47.

Hartnett, R. T. & Centra, J. A. The effects of academic departments on student learning. Journal of Higher Education, 1977 (September-October), 48(5), 491-507.

Hohn, R. L., Des Lauriers, M. & Deaton, W. Learner's characteristics and performance effects in self-paced instruction. Psychological Reports, 1977 (June), 40(3, pt. 1), 1011-1012.

Hursh, D. E. Personalized systems of instruction: What do the data indicate? Journal of Personalized Instruction, 1976 (September), 1(2), 91-105.

Johnson, W. G., Zlotlow, S., Berger, J. L. & Croft, R. G. A traditional lecture versus a PSI course in personality: Some comparisons. Teaching of Psychology, 1975 (December), 2(4), 156-158.

Lloyd, M. E. & Eastman, E. M. Performance on study-guide and non-study-guide test questions as a function of study guide availability. Journal of Personalized Instruction, 1977 (June), 2(2), 80-83.

Kulik, J. A., Kulik, Chen-lin C. & Hertzler, E. C. Modular college teaching with and without required remediation. Journal of Personalized Instruction, 1977 (June), 2(2), 70-75.

McAven, M. W. & Gordon, L. V. Attributions of interpersonal values and teaching effectiveness. Psychological Reports, 1981 (October), 49(2), 539-542.

McKnight, R. T. Field-dependent/independent learning styles: Instructional implications. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978.

McNight, C. & Lovelace, T. The effects of two instructional methods of college students' calculus achievement. 2nd Annual Meeting of the Eastern Educational Research Association, Kiawah Island, SC: February 22, 1979.

Magnan, J. & Smith, R. Diagnosing student learning skills. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978.

Mao-Chen, D. & Lanson, R. N. Effects of the PSI experience beyond the PSI classroom. Journal of Personalized Instruction, 1976 (September), 1(2), 76-79.

Marholin, D. The effect of a minimal grade penalty on mastery quiz performance in a modified PSI course. Journal of Personalized Instruction, 1976 (September), 1(2), 80-85.

Marholin, D. The functional validation of student participation in a PSI group discussion: To discuss or not to discuss: That is the question. Journal of Personalized Instruction, 1977 (June), 2(2), 84-91.

Marsh, H. W. Factors affecting students' evaluations of the same course taught by the same instructor on different occasions. American Educational Research Journal, 1982 (Winter), 19(4), 485-497.

Marsh, H. W. & Ware, J. E. Effects of expressiveness, content coverage, and incentive on multi-dimensional student ratings scales: New interpretation of the Dr. Fox effect. Journal of Educational Psychology, 1982 (February), 74(1), 126-134.

Masendorf, F. & Kratzsch, S. [Teaching style and individual differences: Teachers' self-reports and evaluations by others.] (Germ.) Zeitschrift fur entwick lungspsychologic und Padagogische Psychologie, 1977 (January), 9(1), 41-50.

Menges, R. J. Responding to students' questions. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education. Afton, OK: November 6-8, 1978.

Morris, C. J. & Kimbrell, G. M. Individual differences and PSI: A re-analysis. Journal of Personalized Instruction, 1976 (March), 2(1), 47-49.

Murray, H. G. Low inference classroom teaching behaviors and student ratings of college teaching effectiveness. Journal of Educational Psychology, 1983 (February), 75(1), 138-149.

Neal, D., Cooper, J., Frederick, P., Norris, C., & Nowik, N. G.L.C.A. faculty development sampler. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978.

Otis, G. D. Faculty role expectation: Perception discrepancies and departmental affiliation. Journal of Medical Education, 1977 (January), 52(1), 39-46.

Park, L. I. & Marx, D. J. The effect of contingency vs. no contingency on a final examination in an instructor-paced PSI course. Journal of Personalized Instruction, 1976 (September), 1(2), 128-129.

Passi, B. K. & Malhorta, S. P. Effect of authoritarian-democratic teacher behavior upon the likings of the students toward their teachers. Indian Educational Review, 1975 (January), 10(1), 43-51.

Perkins, D. & Abbott, R. D. Validity of student ratings for two affective outcomes in introductory psychology. Educational & Psychological Measurement, 1982 (Spring), 42(1), 317-323.

Prather, J. E. & Smith, G. A study of the relationships between faculty characteristics, subject field, and course grading patterns. Research in Higher Education, 1976, 5(4), 359-363.

Reiser, R. A. & Sullivan, H. J. Effects of self-pacing and instructor-pacing in a PSI course. Journal of Educational Research, 1977 (September), 71(1), 3-12.

Rich, H. L. & Bush, A. J. The effects of congruent teacher-student characteristics on instructional outcomes. American Educational Research Journal, 1978 (Summer), 15(3), 451-457.

Roberts, D. Y. Personalizing the learning climate. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978.

Sofman, R. J., Hajosy, R. C. & Vojtisek, J. E. Psychology of scientist: XXXIII. Cognitive style differences between science and non-science faculty and students. Perceptual and Motor Skills, 1976 (December), 43(3, pt. 1), 851-854.

Taveggia, T. C. Goodbye teacher, goodbye classroom, hello learning: A radical appraisal of teaching-learning linkages at the college level. Journal of Personalized Instruction, 1977 (June), 2(2), 119-124.

Tennyson, R. D., Boutwell, R. C. & Frey, S. Student preferences for faculty teaching styles. Improving College and University Teaching, 1978 (Summer), 26(3), 194-196.

Towle, N. J. & Merrill, P. F. How students use behavioral objectives. Educational Technology, 1975 (December), 15(12), 41-42.

Van Horn, R. W. Effects of the use of four types of teaching models on student self-concept of academic ability and attitude toward the teacher. American Educational Research Journal, 1976 (Fall), 13(4), 285-291.

Vecchio, R. & Costin, F. Predicting teacher effectiveness from graduate admission predictors. American Educational Research Journal, 1977 (Spring), 14(2), 169-176.

Watts, T. D. Takings a stand: An inquiry-based teaching approach. 4th Annual National Conference, Professional and Organizational Development Network in Higher Education, Afton, OK: November 6-8, 1978.